SEQUENCE LISTING

<110> Liang, Yanbin
      Woodward, David F.

<120> HUMAN COX-1 ALTERNATIVELY SPLICED
   VARIANTS AND METHODS OF USING SAME

<130> 66872-028 (AR5746)

<160> 38

<170> FastSEQ for Windows Version 4.0

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<211> 2022
<212> DNA
<213> Homo sapiens

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<221> CDS
<222> (298)...(2022)

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caccaaggga aatgagttcc ctttctccag cctctaaccg tctgggaacc catcctgatt 180
cccattgcca gtggagaagg tctcccctgg tgaagacttc gggagaacat gggagatgga 240
aatacattta ggagccggga tgcttcatct ggggtttaag agatccccat tgagcaa atg 300
                                                                   Met
                                                                   1

agg aaa ccg agg ctc atg aat ccc tgt tgt tac tat cca tgc cag cac   348
Arg Lys Pro Arg Leu Met Asn Pro Cys Cys Tyr Tyr Pro Cys Gln His
            5   10   15

cag ggc atc tgt gtc cgc ttc ggc ctt gac cgc tac cag tgt gac tgc   396
Gln Gly Ile Cys Val Arg Phe Gly Leu Asp Arg Tyr Gln Cys Asp Cys
            20   25   30

acc cgc acg ggc tat tcc ggc ccc aac tgc acc atc cct ggc ctg tgg   444
Thr Arg Thr Gly Tyr Ser Gly Pro Asn Cys Thr Ile Pro Gly Leu Trp
            35   40   45

acc tgg ctc cgg aat tca ctg cgg ccc agc ccc tct ttc acc cac ttc   492
Thr Trp Leu Arg Asn Ser Leu Arg Pro Ser Pro Ser Phe Thr His Phe
 50   55   60   65

ctg ctc act cac ggg cgc tgg ttc tgg gag ttt gtc aat gcc acc ttc   540
Leu Leu Thr His Gly Arg Trp Phe Trp Glu Phe Val Asn Ala Thr Phe
                    70   75   80

atc cga gag atg ctc atg cgc ctg gta ctc aca gtg cgc tcc aac ctt   588

- 1 -

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          Ile Arg Glu Met Leu Met Arg Leu Val Leu Thr Val Arg Ser Asn Leu
                       85                  90                  95

atc ccc agt ccc ccc acc tac aac tca gca cat gac tac atc agc tgg      636
Ile Pro Ser Pro Pro Thr Tyr Asn Ser Ala His Asp Tyr Ile Ser Trp
            100                 105                 110

gag tct ttc tcc aac gtg agc tat tac act cgt att ctg ccc tct gtg      684
Glu Ser Phe Ser Asn Val Ser Tyr Tyr Thr Arg Ile Leu Pro Ser Val
            115                 120                 125

cct aaa gat tgc ccc aca ccc atg gga acc aaa ggg aag aag cag ttg      732
Pro Lys Asp Cys Pro Thr Pro Met Gly Thr Lys Gly Lys Lys Gln Leu
130                 135                 140                 145

cca gat gcc cag ctc ctg gcc cgc cgc ttc ctg ctc agg agg aag ttc      780
Pro Asp Ala Gln Leu Leu Ala Arg Arg Phe Leu Leu Arg Arg Lys Phe
                150                 155                 160

ata cct gac ccc caa ggc acc aac ctc atg ttt gcc ttc ttt gca caa      828
Ile Pro Asp Pro Gln Gly Thr Asn Leu Met Phe Ala Phe Phe Ala Gln
                165                 170                 175

cac ttc acc cac cag ttc ttc aaa act tct ggc aag atg ggt cct ggc      876
His Phe Thr His Gln Phe Phe Lys Thr Ser Gly Lys Met Gly Pro Gly
            180                 185                 190

ttc acc aag gcc ttg ggc cat ggg gta gac ctc ggc cac att tat gga      924
Phe Thr Lys Ala Leu Gly His Gly Val Asp Leu Gly His Ile Tyr Gly
            195                 200                 205

gac aat ctg gag cgt cag tat caa ctg cgg ctc ttt aag gat ggg aaa      972
Asp Asn Leu Glu Arg Gln Tyr Gln Leu Arg Leu Phe Lys Asp Gly Lys
210                 215                 220                 225

ctc aag tac cag gtg ctg gat gga gaa atg tac ccg ccc tcg gta gaa     1020
Leu Lys Tyr Gln Val Leu Asp Gly Glu Met Tyr Pro Pro Ser Val Glu
                230                 235                 240

gag gcg cct gtg ttg atg cac tac ccc cga ggc atc ccg ccc cag agc     1068
Glu Ala Pro Val Leu Met His Tyr Pro Arg Gly Ile Pro Pro Gln Ser
                245                 250                 255

cag atg gct gtg ggc cag gag gtg ttt ggg ctg ctt cct ggg ctc atg     1116
Gln Met Ala Val Gly Gln Glu Val Phe Gly Leu Leu Pro Gly Leu Met
                260                 265                 270

ctg tat gcc acg ctc tgg cta cgt gag cac aac cgt gtg tgt gac ctg     1164
Leu Tyr Ala Thr Leu Trp Leu Arg Glu His Asn Arg Val Cys Asp Leu
            275                 280                 285

ctg aag gct gag cac ccc acc tgg ggc gat gag cag ctt ttc cag acg     1212
Leu Lys Ala Glu His Pro Thr Trp Gly Asp Glu Gln Leu Phe Gln Thr
290                 295                 300                 305
```

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acc cgc ctc atc ctc ata ggg gag acc atc aag att gtc atc gag gag    1260
Thr Arg Leu Ile Leu Ile Gly Glu Thr Ile Lys Ile Val Ile Glu Glu
            310             315             320

tac gtg cag cag ctg agt ggc tat ttc ctg cag ctg aaa ttt gac cca    1308
Tyr Val Gln Gln Leu Ser Gly Tyr Phe Leu Gln Leu Lys Phe Asp Pro
                325             330             335

gag ctg ctg ttc ggt gtc cag ttc caa tac cgc aac cgc att gcc atg    1356
Glu Leu Leu Phe Gly Val Gln Phe Gln Tyr Arg Asn Arg Ile Ala Met
            340             345             350

gag ttc aac cat ctc tac cac tgg cac ccc ctc atg cct gac tcc ttc    1404
Glu Phe Asn His Leu Tyr His Trp His Pro Leu Met Pro Asp Ser Phe
        355             360             365

aag gtg ggc tcc cag gag tac agc tac gag cag ttc ttg ttc aac acc    1452
Lys Val Gly Ser Gln Glu Tyr Ser Tyr Glu Gln Phe Leu Phe Asn Thr
370             375             380             385

tcc atg ttg gtg gac tat ggg gtt gag gcc ctg gtg gat gcc ttc tct    1500
Ser Met Leu Val Asp Tyr Gly Val Glu Ala Leu Val Asp Ala Phe Ser
                390             395             400

cgc cag att gct ggc cgg atc ggt ggg ggc agg aac atg gac cac cac    1548
Arg Gln Ile Ala Gly Arg Ile Gly Gly Gly Arg Asn Met Asp His His
            405             410             415

atc ctg cat gtg gct gtg gat gtc atc agg gag tct cgg gag atg cgg    1596
Ile Leu His Val Ala Val Asp Val Ile Arg Glu Ser Arg Glu Met Arg
        420             425             430

ctg cag ccc ttc aat gag tac cgc aag agg ttt ggc atg aaa ccc tac    1644
Leu Gln Pro Phe Asn Glu Tyr Arg Lys Arg Phe Gly Met Lys Pro Tyr
        435             440             445

acc tcc ttc cag gag ctc gta gga gag aag gag atg gca gca gag ttg    1692
Thr Ser Phe Gln Glu Leu Val Gly Glu Lys Glu Met Ala Ala Glu Leu
450             455             460             465

gag gaa ttg tat gga gac att gat gcg ttg gag ttc tac cct gga ctg    1740
Glu Glu Leu Tyr Gly Asp Ile Asp Ala Leu Glu Phe Tyr Pro Gly Leu
            470             475             480

ctt ctt gaa aag tgc cat cca aac tct atc ttt ggg gag agt atg ata    1788
Leu Leu Glu Lys Cys His Pro Asn Ser Ile Phe Gly Glu Ser Met Ile
            485             490             495

gag att ggg gct ccc ttt tcc ctc aag ggt ctc cta ggg aat ccc atc    1836
Glu Ile Gly Ala Pro Phe Ser Leu Lys Gly Leu Leu Gly Asn Pro Ile
            500             505             510

tgt tct ccg gag tac tgg aag ccg agc aca ttt ggc ggc gag gtg ggc    1884
Cys Ser Pro Glu Tyr Trp Lys Pro Ser Thr Phe Gly Gly Glu Val Gly
        515             520             525
```

ttt aac att gtc aag acg gcc aca ctg aag aag ctg gtc tgc ctc aac   1932
Phe Asn Ile Val Lys Thr Ala Thr Leu Lys Lys Leu Val Cys Leu Asn
530   535   540   545

acc aag acc tgt ccc tac gtt tcc ttc cgt gtg ccg gat gcc agt cag   1980
Thr Lys Thr Cys Pro Tyr Val Ser Phe Arg Val Pro Asp Ala Ser Gln
                550   555   560

gat gat ggg cct gct gtg gag cga cca tcc aca gag ctc tga   2022
Asp Asp Gly Pro Ala Val Glu Arg Pro Ser Thr Glu Leu *
                565   570

<210> 2
<211> 574
<212> PRT
<213> Homo sapiens

<400> 2
Met Arg Lys Pro Arg Leu Met Asn Pro Cys Cys Tyr Tyr Pro Cys Gln
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His Gln Gly Ile Cys Val Arg Phe Gly Leu Asp Arg Tyr Gln Cys Asp
            20   25   30
Cys Thr Arg Thr Gly Tyr Ser Gly Pro Asn Cys Thr Ile Pro Gly Leu
            35   40   45
Trp Thr Trp Leu Arg Asn Ser Leu Arg Pro Ser Pro Ser Phe Thr His
            50   55   60
Phe Leu Leu Thr His Gly Arg Trp Phe Trp Glu Phe Val Asn Ala Thr
65   70   75   80
Phe Ile Arg Glu Met Leu Met Arg Leu Val Leu Thr Val Arg Ser Asn
                85   90   95
Leu Ile Pro Ser Pro Pro Thr Tyr Asn Ser Ala His Asp Tyr Ile Ser
                100   105   110
Trp Glu Ser Phe Ser Asn Val Ser Tyr Tyr Thr Arg Ile Leu Pro Ser
            115   120   125
Val Pro Lys Asp Cys Pro Thr Pro Met Gly Thr Lys Gly Lys Lys Gln
            130   135   140
Leu Pro Asp Ala Gln Leu Leu Ala Arg Arg Phe Leu Leu Arg Arg Lys
145   150   155   160
Phe Ile Pro Asp Pro Gln Gly Thr Asn Leu Met Phe Ala Phe Phe Ala
                165   170   175
Gln His Phe Thr His Gln Phe Phe Lys Thr Ser Gly Lys Met Gly Pro
            180   185   190
Gly Phe Thr Lys Ala Leu Gly His Gly Val Asp Leu Gly His Ile Tyr
            195   200   205
Gly Asp Asn Leu Glu Arg Gln Tyr Gln Leu Arg Leu Phe Lys Asp Gly
            210   215   220
Lys Leu Lys Tyr Gln Val Leu Asp Gly Glu Met Tyr Pro Pro Ser Val
225   230   235   240
Glu Glu Ala Pro Val Leu Met His Tyr Pro Arg Gly Ile Pro Pro Gln
                245   250   255
Ser Gln Met Ala Val Gly Gln Glu Val Phe Gly Leu Leu Pro Gly Leu
                260   265   270

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Met Leu Tyr Ala Thr Leu Trp Leu Arg Glu His Asn Arg Val Cys Asp
        275             280             285
Leu Leu Lys Ala Glu His Pro Thr Trp Gly Asp Glu Gln Leu Phe Gln
        290             295             300
Thr Thr Arg Leu Ile Leu Ile Gly Glu Thr Ile Lys Ile Val Ile Glu
305             310             315             320
Glu Tyr Val Gln Gln Leu Ser Gly Tyr Phe Leu Gln Leu Lys Phe Asp
            325             330             335
Pro Glu Leu Leu Phe Gly Val Gln Phe Gln Tyr Arg Asn Arg Ile Ala
            340             345             350
Met Glu Phe Asn His Leu Tyr His Trp His Pro Leu Met Pro Asp Ser
        355             360             365
Phe Lys Val Gly Ser Gln Glu Tyr Ser Tyr Glu Gln Phe Leu Phe Asn
        370             375             380
Thr Ser Met Leu Val Asp Tyr Gly Val Glu Ala Leu Val Asp Ala Phe
385             390             395             400
Ser Arg Gln Ile Ala Gly Arg Ile Gly Gly Gly Arg Asn Met Asp His
            405             410             415
His Ile Leu His Val Ala Val Asp Val Ile Arg Glu Ser Arg Glu Met
            420             425             430
Arg Leu Gln Pro Phe Asn Glu Tyr Arg Lys Arg Phe Gly Met Lys Pro
        435             440             445
Tyr Thr Ser Phe Gln Glu Leu Val Gly Glu Lys Glu Met Ala Ala Glu
        450             455             460
Leu Glu Glu Leu Tyr Gly Asp Ile Asp Ala Leu Glu Phe Tyr Pro Gly
465             470             475             480
Leu Leu Leu Glu Lys Cys His Pro Asn Ser Ile Phe Gly Glu Ser Met
            485             490             495
Ile Glu Ile Gly Ala Pro Phe Ser Leu Lys Gly Leu Leu Gly Asn Pro
            500             505             510
Ile Cys Ser Pro Glu Tyr Trp Lys Pro Ser Thr Phe Gly Gly Glu Val
            515             520             525
Gly Phe Asn Ile Val Lys Thr Ala Thr Leu Lys Lys Leu Val Cys Leu
            530             535             540
Asn Thr Lys Thr Cys Pro Tyr Val Ser Phe Arg Val Pro Asp Ala Ser
545             550             555             560
Gln Asp Asp Gly Pro Ala Val Glu Arg Pro Ser Thr Glu Leu
            565             570
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<213> Homo sapiens

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<222> (298)...(1620)

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caccaaggga aatgagttcc ctttctccag cctctaaccg tctgggaacc catcctgatt 180
cccattgcca gtggagaagg tctcccctgg tgaagacttc gggagaacat gggagatgga 240
aatacattta ggagccggga tgcttcatct ggggtttaag agatccccat tgagcaa atg 300
```

```
agg aaa ccg agg ctc agg aag aag cag ttg cca gat gcc cag ctc ctg    348
Arg Lys Pro Arg Leu Arg Lys Lys Gln Leu Pro Asp Ala Gln Leu Leu
            5                   10                  15
```

```
gcc cgc cgc ttc ctg ctc agg agg aag ttc ata cct gac ccc caa ggc    396
Ala Arg Arg Phe Leu Leu Arg Arg Lys Phe Ile Pro Asp Pro Gln Gly
            20                  25                  30
```

```
acc aac ctc atg ttt gcc ttc ttt gca caa cac ttc acc cac cag ttc    444
Thr Asn Leu Met Phe Ala Phe Phe Ala Gln His Phe Thr His Gln Phe
        35                  40                  45
```

```
ttc aaa act tct ggc aag atg ggt cct ggc ttc acc aag gcc ttg ggc    492
Phe Lys Thr Ser Gly Lys Met Gly Pro Gly Phe Thr Lys Ala Leu Gly
    50                  55                  60                  65
```

```
cat ggg gta gac ctc ggc cac att tat gga gac aat ctg gag cgt cag    540
His Gly Val Asp Leu Gly His Ile Tyr Gly Asp Asn Leu Glu Arg Gln
                70                  75                  80
```

```
tat caa ctg cgg ctc ttt aag gat ggg aaa ctc aag tac cag gtg ctg    588
Tyr Gln Leu Arg Leu Phe Lys Asp Gly Lys Leu Lys Tyr Gln Val Leu
                85                  90                  95
```

```
gat gga gaa atg tac ccg ccc tcg gta gaa gag gcg cct gtg ttg atg    636
Asp Gly Glu Met Tyr Pro Pro Ser Val Glu Glu Ala Pro Val Leu Met
            100                 105                 110
```

```
cac tac ccc cga ggc atc ccg ccc cag agc cag atg gct gtg ggc cag    684
His Tyr Pro Arg Gly Ile Pro Pro Gln Ser Gln Met Ala Val Gly Gln
            115                 120                 125
```

```
gag gtg ttt ggg ctg ctt cct ggg ctc atg ctg tat gcc acg ctc tgg    732
Glu Val Phe Gly Leu Leu Pro Gly Leu Met Leu Tyr Ala Thr Leu Trp
130                 135                 140                 145
```

```
cta cgt gag cac aac cgt gtg tgt gac ctg ctg aag gct gag cac ccc    780
Leu Arg Glu His Asn Arg Val Cys Asp Leu Leu Lys Ala Glu His Pro
                150                 155                 160
```

```
acc tgg ggc gat gag cag ctt ttc cag acg acc cgc ctc atc ctc ata    828
Thr Trp Gly Asp Glu Gln Leu Phe Gln Thr Thr Arg Leu Ile Leu Ile
            165                 170                 175
```

```
ggg gag acc atc aag att gtc atc gag gag tac gtg cag cag ctg agt    876
Gly Glu Thr Ile Lys Ile Val Ile Glu Glu Tyr Val Gln Gln Leu Ser
            180                 185                 190
```

```
ggc tat ttc ctg cag ctg aaa ttt gac cca gag ctg ctg ttc ggt gtc    924
Gly Tyr Phe Leu Gln Leu Lys Phe Asp Pro Glu Leu Leu Phe Gly Val
    195                 200                 205
```

```
cag ttc caa tac cgc aac cgc att gcc atg gag ttc aac cat ctc tac   972
Gln Phe Gln Tyr Arg Asn Arg Ile Ala Met Glu Phe Asn His Leu Tyr
210             215             220             225

cac tgg cac ccc ctc atg cct gac tcc ttc aag gtg ggc tcc cag gag   1020
His Trp His Pro Leu Met Pro Asp Ser Phe Lys Val Gly Ser Gln Glu
                230             235             240

tac agc tac gag cag ttc ttg ttc aac acc tcc atg ttg gtg gac tat   1068
Tyr Ser Tyr Glu Gln Phe Leu Phe Asn Thr Ser Met Leu Val Asp Tyr
            245             250             255

ggg gtt gag gcc ctg gtg gat gcc ttc tct cgc cag att gct ggc cgg   1116
Gly Val Glu Ala Leu Val Asp Ala Phe Ser Arg Gln Ile Ala Gly Arg
                260             265             270

atc ggt ggg ggc agg aac atg gac cac cac atc ctg cat gtg gct gtg   1164
Ile Gly Gly Gly Arg Asn Met Asp His His Ile Leu His Val Ala Val
    275             280             285

gat gtc atc agg gag tct cgg gag atg cgg ctg cag ccc ttc aat gag   1212
Asp Val Ile Arg Glu Ser Arg Glu Met Arg Leu Gln Pro Phe Asn Glu
290             295             300             305

tac cgc aag agg ttt ggc atg aaa ccc tac acc tcc ttc cag gag ctc   1260
Tyr Arg Lys Arg Phe Gly Met Lys Pro Tyr Thr Ser Phe Gln Glu Leu
                310             315             320

gta gga gag aag gag atg gca gca gag ttg gag gaa ttg tat gga gac   1308
Val Gly Glu Lys Glu Met Ala Ala Glu Leu Glu Glu Leu Tyr Gly Asp
                325             330             335

att gat gcg ttg gag ttc tac cct gga ctg ctt ctt gaa aag tgc cat   1356
Ile Asp Ala Leu Glu Phe Tyr Pro Gly Leu Leu Leu Glu Lys Cys His
            340             345             350

cca aac tct atc ttt ggg gag agt atg ata gag att ggg gct ccc ttt   1404
Pro Asn Ser Ile Phe Gly Glu Ser Met Ile Glu Ile Gly Ala Pro Phe
            355             360             365

tcc ctc aag ggt ctc cta ggg aat ccc atc tgt tct ccg gag tac tgg   1452
Ser Leu Lys Gly Leu Leu Gly Asn Pro Ile Cys Ser Pro Glu Tyr Trp
370             375             380             385

aag ccg agc aca ttt ggc ggc gag gtg ggc ttt aac att gtc aag acg   1500
Lys Pro Ser Thr Phe Gly Gly Glu Val Gly Phe Asn Ile Val Lys Thr
                390             395             400

gcc aca ctg aag aag ctg gtc tgc ctc aac acc aag acc tgt ccc tac   1548
Ala Thr Leu Lys Lys Leu Val Cys Leu Asn Thr Lys Thr Cys Pro Tyr
                405             410             415

gtt tcc ttc cgt gtg ccg gat gcc agt cag gat gat ggg cct gct gtg   1596
Val Ser Phe Arg Val Pro Asp Ala Ser Gln Asp Asp Gly Pro Ala Val
            420             425             430
```

```
gag cga cca tcc aca gag ctc tga ggggcaggaa agcagcattc tggaggggag   1650
Glu Arg Pro Ser Thr Glu Leu  *
    435             440

agctttgtgc ttgtcattcc agagtgctga ggccagggct gatggtctta aatgctcatt   1710
ttctggtttg gcatggtgag tgttggggtt gacatttaga actttaagtc tcacccatta   1770
tctggaatat tgtgattctg tttattcttc cagaatgctg aactcctt               1818
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<210> 4
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<212> PRT
<213> Homo sapiens

<400> 4

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Met Arg Lys Pro Arg Leu Arg Lys Lys Gln Leu Pro Asp Ala Gln Leu
  1           5               10              15
Leu Ala Arg Arg Phe Leu Leu Arg Arg Lys Phe Ile Pro Asp Pro Gln
          20              25              30
Gly Thr Asn Leu Met Phe Ala Phe Phe Ala Gln His Phe Thr His Gln
          35              40              45
Phe Phe Lys Thr Ser Gly Lys Met Gly Pro Gly Phe Thr Lys Ala Leu
    50              55              60
Gly His Gly Val Asp Leu Gly His Ile Tyr Gly Asp Asn Leu Glu Arg
65              70              75              80
Gln Tyr Gln Leu Arg Leu Phe Lys Asp Gly Lys Leu Lys Tyr Gln Val
              85              90              95
Leu Asp Gly Glu Met Tyr Pro Pro Ser Val Glu Glu Ala Pro Val Leu
          100             105             110
Met His Tyr Pro Arg Gly Ile Pro Pro Gln Ser Gln Met Ala Val Gly
          115             120             125
Gln Glu Val Phe Gly Leu Leu Pro Gly Leu Met Leu Tyr Ala Thr Leu
          130             135             140
Trp Leu Arg Glu His Asn Arg Val Cys Asp Leu Leu Lys Ala Glu His
145             150             155             160
Pro Thr Trp Gly Asp Glu Gln Leu Phe Gln Thr Thr Arg Leu Ile Leu
              165             170             175
Ile Gly Glu Thr Ile Lys Ile Val Ile Glu Glu Tyr Val Gln Gln Leu
              180             185             190
Ser Gly Tyr Phe Leu Gln Leu Lys Phe Asp Pro Glu Leu Leu Phe Gly
              195             200             205
Val Gln Phe Gln Tyr Arg Asn Arg Ile Ala Met Glu Phe Asn His Leu
          210             215             220
Tyr His Trp His Pro Leu Met Pro Asp Ser Phe Lys Val Gly Ser Gln
225             230             235             240
Glu Tyr Ser Tyr Glu Gln Phe Leu Phe Asn Thr Ser Met Leu Val Asp
              245             250             255
Tyr Gly Val Glu Ala Leu Val Asp Ala Phe Ser Arg Gln Ile Ala Gly
          260             265             270
Arg Ile Gly Gly Gly Arg Asn Met Asp His His Ile Leu His Val Ala
          275             280             285
Val Asp Val Ile Arg Glu Ser Arg Glu Met Arg Leu Gln Pro Phe Asn
          290             295             300
Glu Tyr Arg Lys Arg Phe Gly Met Lys Pro Tyr Thr Ser Phe Gln Glu
305             310             315             320
```

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```
Leu Val Gly Glu Lys Glu Met Ala Ala Glu Leu Glu Glu Leu Tyr Gly
                325             330             335
Asp Ile Asp Ala Leu Glu Phe Tyr Pro Gly Leu Leu Leu Glu Lys Cys
                340             345             350
His Pro Asn Ser Ile Phe Gly Glu Ser Met Ile Glu Ile Gly Ala Pro
                355             360             365
Phe Ser Leu Lys Gly Leu Leu Gly Asn Pro Ile Cys Ser Pro Glu Tyr
                370             375             380
Trp Lys Pro Ser Thr Phe Gly Gly Glu Val Gly Phe Asn Ile Val Lys
385             390             395             400
Thr Ala Thr Leu Lys Lys Leu Val Cys Leu Asn Thr Lys Thr Cys Pro
                405             410             415
Tyr Val Ser Phe Arg Val Pro Asp Ala Ser Gln Asp Asp Gly Pro Ala
                420             425             430
Val Glu Arg Pro Ser Thr Glu Leu
            435             440


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<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (298)...(1911)

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gtcctgctcg cggacccagg ggcgcccacg ccaggggcct ctttgggagg aagccgcagg 120
caccaaggga atgagttcc ctttctccag cctctaaccg tctgggaacc catcctgatt 180
cccattgcca gtggagaagg tctcccctgg tgaagacttc gggagaacat gggagatgga 240
aatacattta ggagccggga tgcttcatct ggggtttaag agatccccat tgagcaa atg 300
                                                              Met
                                                                1

agg aaa ccg agg ctc atg aat ccc tgt tgt tac tat cca tgc cag cac   348
Arg Lys Pro Arg Leu Met Asn Pro Cys Cys Tyr Tyr Pro Cys Gln His
            5                   10                  15

cag ggc atc tgt gtc cgc ttc ggc ctt gac cgc tac cag tgt gac tgc   396
Gln Gly Ile Cys Val Arg Phe Gly Leu Asp Arg Tyr Gln Cys Asp Cys
            20                  25                  30

acc cgc acg ggc tat tcc ggc ccc aac tgc acc atc cct ggc ctg tgg   444
Thr Arg Thr Gly Tyr Ser Gly Pro Asn Cys Thr Ile Pro Gly Leu Trp
            35                  40                  45

acc tgg ctc cgg aat tca ctg cgg ccc agc ccc tct ttc acc cac ttc   492
Thr Trp Leu Arg Asn Ser Leu Arg Pro Ser Pro Ser Phe Thr His Phe
 50                 55                  60                  65

ctg ctc act cac ggg cgc tgg ttc tgg gag ttt gtc aat gcc acc ttc   540
Leu Leu Thr His Gly Arg Trp Phe Trp Glu Phe Val Asn Ala Thr Phe
                70                  75                  80
```

```
atc cga gag atg ctc atg cgc ctg gta ctc aca gtg cgc tcc aac ctt    588
Ile Arg Glu Met Leu Met Arg Leu Val Leu Thr Val Arg Ser Asn Leu
             85                  90                  95

atc ccc agt ccc ccc acc tac aac tca gca cat gac tac atc agc tgg    636
Ile Pro Ser Pro Pro Thr Tyr Asn Ser Ala His Asp Tyr Ile Ser Trp
            100                 105                 110

gag tct ttc tcc aac gtg agc tat tac act cgt att ctg ccc tct gtg    684
Glu Ser Phe Ser Asn Val Ser Tyr Tyr Thr Arg Ile Leu Pro Ser Val
            115                 120                 125

cct aaa gat tgc ccc aca ccc atg gga acc aaa ggg aag aag cag ttg    732
Pro Lys Asp Cys Pro Thr Pro Met Gly Thr Lys Gly Lys Lys Gln Leu
130                 135                 140                 145

cca gat gcc cag ctc ctg gcc cgc cgc ttc ctg ctc agg agg aag ttc    780
Pro Asp Ala Gln Leu Leu Ala Arg Arg Phe Leu Leu Arg Arg Lys Phe
                150                 155                 160

ata cct gac ccc caa ggc acc aac ctc atg ttt gcc ttc ttt gca caa    828
Ile Pro Asp Pro Gln Gly Thr Asn Leu Met Phe Ala Phe Phe Ala Gln
                165                 170                 175

cac ttc acc cac cag ttc ttc aaa act tct ggc aag atg ggt cct ggc    876
His Phe Thr His Gln Phe Phe Lys Thr Ser Gly Lys Met Gly Pro Gly
                180                 185                 190

ttc acc aag gcc ttg ggc cat ggg gta gac ctc ggc cac att tat gga    924
Phe Thr Lys Ala Leu Gly His Gly Val Asp Leu Gly His Ile Tyr Gly
            195                 200                 205

gac aat ctg gag cgt cag tat caa ctg cgg ctc ttt aag gat ggg aaa    972
Asp Asn Leu Glu Arg Gln Tyr Gln Leu Arg Leu Phe Lys Asp Gly Lys
210                 215                 220                 225

ctc aag tac cag gtg ctg gat gga gaa atg tac ccg ccc tcg gta gaa   1020
Leu Lys Tyr Gln Val Leu Asp Gly Glu Met Tyr Pro Pro Ser Val Glu
                230                 235                 240

gag gcg cct gtg ttg atg cac tac ccc cga ggc atc ccg ccc cag agc   1068
Glu Ala Pro Val Leu Met His Tyr Pro Arg Gly Ile Pro Pro Gln Ser
                245                 250                 255

cag atg gct gtg ggc cag gag gtg ttt ggg ctg ctt cct ggg ctc atg   1116
Gln Met Ala Val Gly Gln Glu Val Phe Gly Leu Leu Pro Gly Leu Met
                260                 265                 270

ctg tat gcc acg ctc tgg cta cgt gag cac aac cgt gtg tgt gac ctg   1164
Leu Tyr Ala Thr Leu Trp Leu Arg Glu His Asn Arg Val Cys Asp Leu
            275                 280                 285

ctg aag gct gag cac ccc acc tgg ggc gat gag cag ctt ttc cag acg   1212
Leu Lys Ala Glu His Pro Thr Trp Gly Asp Glu Gln Leu Phe Gln Thr
```

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acc cgc ctc atc ctc ata ggg gag acc atc aag att gtc atc gag gag   1260
Thr Arg Leu Ile Leu Ile Gly Glu Thr Ile Lys Ile Val Ile Glu Glu
                310   315   320

tac gtg cag cag ctg agt ggc tat ttc ctg cag ctg aaa ttt gac cca   1308
Tyr Val Gln Gln Leu Ser Gly Tyr Phe Leu Gln Leu Lys Phe Asp Pro
                325   330   335

gag ctg ctg ttc ggt gtc cag ttc caa tac cgc aac cgc att gcc atg   1356
Glu Leu Leu Phe Gly Val Gln Phe Gln Tyr Arg Asn Arg Ile Ala Met
                340   345   350

gag ttc aac cat ctc tac cac tgg cac ccc ctc atg cct gac tcc ttc   1404
Glu Phe Asn His Leu Tyr His Trp His Pro Leu Met Pro Asp Ser Phe
                355   360   365

aag atc ggt ggg ggc agg aac atg gac cac cac atc ctg cat gtg gct   1452
Lys Ile Gly Gly Gly Arg Asn Met Asp His His Ile Leu His Val Ala
370   375   380   385

gtg gat gtc atc agg gag tct cgg gag atg cgg ctg cag ccc ttc aat   1500
Val Asp Val Ile Arg Glu Ser Arg Glu Met Arg Leu Gln Pro Phe Asn
                390   395   400

gag tac cgc aag agg ttt ggc atg aaa ccc tac acc tcc ttc cag gag   1548
Glu Tyr Arg Lys Arg Phe Gly Met Lys Pro Tyr Thr Ser Phe Gln Glu
                405   410   415

ctc gta gga gag aag gag atg gca gca gag ttg gag gaa ttg tat gga   1596
Leu Val Gly Glu Lys Glu Met Ala Ala Glu Leu Glu Glu Leu Tyr Gly
                420   425   430

gac att gat gcg ttg gag ttc tac cct gga ctg ctt ctt gaa aag tgc   1644
Asp Ile Asp Ala Leu Glu Phe Tyr Pro Gly Leu Leu Leu Glu Lys Cys
                435   440   445

cat cca aac tct atc ttt ggg gag agt atg ata gag att ggg gct ccc   1692
His Pro Asn Ser Ile Phe Gly Glu Ser Met Ile Glu Ile Gly Ala Pro
450   455   460   465

ttt tcc ctc aag ggt ctc cta ggg aat ccc atc tgt tct ccg gag tac   1740
Phe Ser Leu Lys Gly Leu Leu Gly Asn Pro Ile Cys Ser Pro Glu Tyr
                470   475   480

tgg aag ccg agc aca ttt ggc ggc gag gtg ggc ttt aac att gtc aag   1788
Trp Lys Pro Ser Thr Phe Gly Gly Glu Val Gly Phe Asn Ile Val Lys
                485   490   495

acg gcc aca ctg aag aag ctg gtc tgc ctc aac acc aag acc tgt ccc   1836
Thr Ala Thr Leu Lys Lys Leu Val Cys Leu Asn Thr Lys Thr Cys Pro
                500   505   510

tac gtt tcc ttc cgt gtg ccg gat gcc agt cag gat gat ggg cct gct   1884

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```
Tyr Val Ser Phe Arg Val Pro Asp Ala Ser Gln Asp Asp Gly Pro Ala
    515                 520                 525


gtg gag cga cca tcc aca gag ctc tga ggggcaggaa agcagcattc       1931
Val Glu Arg Pro Ser Thr Glu Leu  *
530                 535


tggaggggag agctttgtgc ttgtcattcc agagtgctga ggccagggct gatggtctta 1991
aatgctcatt ttctggtttg gcatggtgag tgttgggggtt gacatttaga actttaagtc 2051
tcacccatta tctggaatat tgtgattctg tttattcttc cagaatgctg aactcctt   2109
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<210> 6
<211> 537
<212> PRT
<213> Homo sapiens

<400> 6

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Met Arg Lys Pro Arg Leu Met Asn Pro Cys Cys Tyr Tyr Pro Cys Gln
 1               5                   10                  15
His Gln Gly Ile Cys Val Arg Phe Gly Leu Asp Arg Tyr Gln Cys Asp
            20                  25                  30
Cys Thr Arg Thr Gly Tyr Ser Gly Pro Asn Cys Thr Ile Pro Gly Leu
        35                  40                  45
Trp Thr Trp Leu Arg Asn Ser Leu Arg Pro Ser Pro Ser Phe Thr His
    50                  55                  60
Phe Leu Leu Thr His Gly Arg Trp Phe Trp Glu Phe Val Asn Ala Thr
65                  70                  75                  80
Phe Ile Arg Glu Met Leu Met Arg Leu Val Leu Thr Val Arg Ser Asn
                85                  90                  95
Leu Ile Pro Ser Pro Pro Thr Tyr Asn Ser Ala His Asp Tyr Ile Ser
            100                 105                 110
Trp Glu Ser Phe Ser Asn Val Ser Tyr Tyr Thr Arg Ile Leu Pro Ser
            115                 120                 125
Val Pro Lys Asp Cys Pro Thr Pro Met Gly Thr Lys Gly Lys Lys Gln
    130                 135                 140
Leu Pro Asp Ala Gln Leu Leu Ala Arg Arg Phe Leu Leu Arg Arg Lys
145                 150                 155                 160
Phe Ile Pro Asp Pro Gln Gly Thr Asn Leu Met Phe Ala Phe Phe Ala
                165                 170                 175
Gln His Phe Thr His Gln Phe Phe Lys Thr Ser Gly Lys Met Gly Pro
            180                 185                 190
Gly Phe Thr Lys Ala Leu Gly His Gly Val Asp Leu Gly His Ile Tyr
            195                 200                 205
Gly Asp Asn Leu Glu Arg Gln Tyr Gln Leu Arg Leu Phe Lys Asp Gly
            210                 215                 220
Lys Leu Lys Tyr Gln Val Leu Asp Gly Glu Met Tyr Pro Pro Ser Val
225                 230                 235                 240
Glu Glu Ala Pro Val Leu Met His Tyr Pro Arg Gly Ile Pro Pro Gln
                245                 250                 255
Ser Gln Met Ala Val Gly Gln Glu Val Phe Gly Leu Leu Pro Gly Leu
            260                 265                 270
Met Leu Tyr Ala Thr Leu Trp Leu Arg Glu His Asn Arg Val Cys Asp
            275                 280                 285
Leu Leu Lys Ala Glu His Pro Thr Trp Gly Asp Glu Gln Leu Phe Gln
    290                 295                 300
```

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Thr Thr Arg Leu Ile Leu Ile Gly Glu Thr Ile Lys Ile Val Ile Glu
305                 310                 315                 320
Glu Tyr Val Gln Gln Leu Ser Gly Tyr Phe Leu Gln Leu Lys Phe Asp
                325                 330                 335
Pro Glu Leu Leu Phe Gly Val Gln Phe Gln Tyr Arg Asn Arg Ile Ala
                340                 345                 350
Met Glu Phe Asn His Leu Tyr His Trp His Pro Leu Met Pro Asp Ser
                355                 360                 365
Phe Lys Ile Gly Gly Gly Arg Asn Met Asp His His Ile Leu His Val
            370                 375                 380
Ala Val Asp Val Ile Arg Glu Ser Arg Glu Met Arg Leu Gln Pro Phe
385                 390                 395                 400
Asn Glu Tyr Arg Lys Arg Phe Gly Met Lys Pro Tyr Thr Ser Phe Gln
                405                 410                 415
Glu Leu Val Gly Glu Lys Glu Met Ala Ala Glu Leu Glu Glu Leu Tyr
                420                 425                 430
Gly Asp Ile Asp Ala Leu Glu Phe Tyr Pro Gly Leu Leu Leu Glu Lys
            435                 440                 445
Cys His Pro Asn Ser Ile Phe Gly Glu Ser Met Ile Glu Ile Gly Ala
        450                 455                 460
Pro Phe Ser Leu Lys Gly Leu Leu Gly Asn Pro Ile Cys Ser Pro Glu
465                 470                 475                 480
Tyr Trp Lys Pro Ser Thr Phe Gly Gly Glu Val Gly Phe Asn Ile Val
                485                 490                 495
Lys Thr Ala Thr Leu Lys Lys Leu Val Cys Leu Asn Thr Lys Thr Cys
                500                 505                 510
Pro Tyr Val Ser Phe Arg Val Pro Asp Ala Ser Gln Asp Asp Gly Pro
            515                 520                 525
Ala Val Glu Arg Pro Ser Thr Glu Leu
    530                 535


<210> 7
<211> 2280
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (298)...(2082)

<400> 7
atgagccgga gtctcttgct ccggttcttg ctgttcctgc tcctgctccc gccgctcccc 60
gtcctgctcg cggacccagg ggcgcccacg ccaggggcct ctttgggagg aagccgcagg 120
caccaaggga aatgagttcc ctttctccag cctctaaccg tctgggaacc catcctgatt 180
cccattgcca gtggagaagg tctcccctgg tgaagacttc gggagaacat gggagatgga 240
aatacattta ggagccggga tgcttcatct ggggtttaag agatccccat tgagcaa atg 300
                                                                Met
                                                                1


agg aaa ccg agg ctc agt agg tgc cat gat tcc cca agc tca caa aat    348
Arg Lys Pro Arg Leu Ser Arg Cys His Asp Ser Pro Ser Ser Gln Asn
            5                  10                 15


aca tgg tgg gcc cag gat ctg aac tca gtg aat ccc tgt tgt tac tat    396
```

```
Thr Trp Trp Ala Gln Asp Leu Asn Ser Val Asn Pro Cys Cys Tyr Tyr
        20                  25                  30


cca tgc cag cac cag ggc atc tgt gtc cgc ttc ggc ctt gac cgc tac    444
Pro Cys Gln His Gln Gly Ile Cys Val Arg Phe Gly Leu Asp Arg Tyr
        35                  40                  45


cag tgt gac tgc acc cgc acg ggc tat tcc ggc ccc aac tgc acc atc    492
Gln Cys Asp Cys Thr Arg Thr Gly Tyr Ser Gly Pro Asn Cys Thr Ile
50                  55                  60                  65


cct ggc ctg tgg acc tgg ctc cgg aat tca ctg cgg ccc agc ccc tct    540
Pro Gly Leu Trp Thr Trp Leu Arg Asn Ser Leu Arg Pro Ser Pro Ser
                70                  75                  80


ttc acc cac ttc ctg ctc act cac ggg cgc tgg ttc tgg gag ttt gtc    588
Phe Thr His Phe Leu Leu Thr His Gly Arg Trp Phe Trp Glu Phe Val
                85                  90                  95


aat gcc acc ttc atc cga gag atg ctc atg cgc ctg gta ctc aca gtg    636
Asn Ala Thr Phe Ile Arg Glu Met Leu Met Arg Leu Val Leu Thr Val
            100                 105                 110


cgc tcc aac ctt atc ccc agt ccc ccc acc tac aac tca gca cat gac    684
Arg Ser Asn Leu Ile Pro Ser Pro Pro Thr Tyr Asn Ser Ala His Asp
        115                 120                 125


tac atc agc tgg gag tct ttc tcc aac gtg agc tat tac act cgt att    732
Tyr Ile Ser Trp Glu Ser Phe Ser Asn Val Ser Tyr Tyr Thr Arg Ile
130                 135                 140                 145


ctg ccc tct gtg cct aaa gat tgc ccc aca ccc atg gga acc aaa ggg    780
Leu Pro Ser Val Pro Lys Asp Cys Pro Thr Pro Met Gly Thr Lys Gly
                150                 155                 160


aag aag cag ttg cca gat gcc cag ctc ctg gcc cgc cgc ttc ctg ctc    828
Lys Lys Gln Leu Pro Asp Ala Gln Leu Leu Ala Arg Arg Phe Leu Leu
                165                 170                 175


agg agg aag ttc ata cct gac ccc caa ggc acc aac ctc atg ttt gcc    876
Arg Arg Lys Phe Ile Pro Asp Pro Gln Gly Thr Asn Leu Met Phe Ala
            180                 185                 190


ttc ttt gca caa cac ttc acc cac cag ttc ttc aaa act tct ggc aag    924
Phe Phe Ala Gln His Phe Thr His Gln Phe Phe Lys Thr Ser Gly Lys
        195                 200                 205


atg ggt cct ggc ttc acc aag gcc ttg ggc cat ggg gta gac ctc ggc    972
Met Gly Pro Gly Phe Thr Lys Ala Leu Gly His Gly Val Asp Leu Gly
210                 215                 220                 225


cac att tat gga gac aat ctg gag cgt cag tat caa ctg cgg ctc ttt   1020
His Ile Tyr Gly Asp Asn Leu Glu Arg Gln Tyr Gln Leu Arg Leu Phe
                230                 235                 240
```

aag gat ggg aaa ctc aag tac cag gtg ctg gat gga gaa atg tac ccg   1068
Lys Asp Gly Lys Leu Lys Tyr Gln Val Leu Asp Gly Glu Met Tyr Pro
            245   250   255

ccc tcg gta gaa gag gcg cct gtg ttg atg cac tac ccc cga ggc atc   1116
Pro Ser Val Glu Glu Ala Pro Val Leu Met His Tyr Pro Arg Gly Ile
            260   265   270

ccg ccc cag agc cag atg gct gtg ggc cag gag gtg ttt ggg ctg ctt   1164
Pro Pro Gln Ser Gln Met Ala Val Gly Gln Glu Val Phe Gly Leu Leu
            275   280   285

cct ggg ctc atg ctg tat gcc acg ctc tgg cta cgt gag cac aac cgt   1212
Pro Gly Leu Met Leu Tyr Ala Thr Leu Trp Leu Arg Glu His Asn Arg
290   295   300   305

gtg tgt gac ctg ctg aag gct gag cac ccc acc tgg ggc gat gag cag   1260
Val Cys Asp Leu Leu Lys Ala Glu His Pro Thr Trp Gly Asp Glu Gln
            310   315   320

ctt ttc cag acg acc cgc ctc atc ctc ata ggg gag acc atc aag att   1308
Leu Phe Gln Thr Thr Arg Leu Ile Leu Ile Gly Glu Thr Ile Lys Ile
            325   330   335

gtc atc gag gag tac gtg cag cag ctg agt ggc tat ttc ctg cag ctg   1356
Val Ile Glu Glu Tyr Val Gln Gln Leu Ser Gly Tyr Phe Leu Gln Leu
            340   345   350

aaa ttt gac cca gag ctg ctg ttc ggt gtc cag ttc caa tac cgc aac   1404
Lys Phe Asp Pro Glu Leu Leu Phe Gly Val Gln Phe Gln Tyr Arg Asn
            355   360   365

cgc att gcc atg gag ttc aac cat ctc tac cac tgg cac ccc ctc atg   1452
Arg Ile Ala Met Glu Phe Asn His Leu Tyr His Trp His Pro Leu Met
370   375   380   385

cct gac tcc ttc aag gtg ggc tcc cag gag tac agc tac gag cag ttc   1500
Pro Asp Ser Phe Lys Val Gly Ser Gln Glu Tyr Ser Tyr Glu Gln Phe
            390   395   400

ttg ttc aac acc tcc atg ttg gtg gac tat ggg gtt gag gcc ctg gtg   1548
Leu Phe Asn Thr Ser Met Leu Val Asp Tyr Gly Val Glu Ala Leu Val
            405   410   415

gat gcc ttc tct cgc cag att gct ggc cgg atc ggt ggg ggc agg aac   1596
Asp Ala Phe Ser Arg Gln Ile Ala Gly Arg Ile Gly Gly Gly Arg Asn
            420   425   430

atg gac cac cac atc ctg cat gtg gct gtg gat gtc atc agg gag tct   1644
Met Asp His His Ile Leu His Val Ala Val Asp Val Ile Arg Glu Ser
            435   440   445

cgg gag atg cgg ctg cag ccc ttc aat gag tac cgc aag agg ttt ggc   1692
Arg Glu Met Arg Leu Gln Pro Phe Asn Glu Tyr Arg Lys Arg Phe Gly
450   455   460   465

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```
atg aaa ccc tac acc tcc ttc cag gag ctc gta gga gag aag gag atg   1740
Met Lys Pro Tyr Thr Ser Phe Gln Glu Leu Val Gly Glu Lys Glu Met
            470                 475                 480

gca gca gag ttg gag gaa ttg tat gga gac att gat gcg ttg gag ttc   1788
Ala Ala Glu Leu Glu Glu Leu Tyr Gly Asp Ile Asp Ala Leu Glu Phe
            485                 490                 495

tac cct gga ctg ctt ctt gaa aag tgc cat cca aac tct atc ttt ggg   1836
Tyr Pro Gly Leu Leu Leu Glu Lys Cys His Pro Asn Ser Ile Phe Gly
            500                 505                 510

gag agt atg ata gag att ggg gct ccc ttt tcc ctc aag ggt ctc cta   1884
Glu Ser Met Ile Glu Ile Gly Ala Pro Phe Ser Leu Lys Gly Leu Leu
            515                 520                 525

ggg aat ccc atc tgt tct ccg gag tac tgg aag ccg agc aca ttt ggc   1932
Gly Asn Pro Ile Cys Ser Pro Glu Tyr Trp Lys Pro Ser Thr Phe Gly
530                 535                 540                 545

ggc gag gtg ggc ttt aac att gtc aag acg gcc aca ctg aag aag ctg   1980
Gly Glu Val Gly Phe Asn Ile Val Lys Thr Ala Thr Leu Lys Lys Leu
                550                 555                 560

gtc tgc ctc aac acc aag acc tgt ccc tac gtt tcc ttc cgt gtg ccg   2028
Val Cys Leu Asn Thr Lys Thr Cys Pro Tyr Val Ser Phe Arg Val Pro
                565                 570                 575

gat gcc agt cag gat gat ggg cct gct gtg gag cga cca tcc aca gag   2076
Asp Ala Ser Gln Asp Asp Gly Pro Ala Val Glu Arg Pro Ser Thr Glu
            580                 585                 590

ctc tga ggggcaggaa agcagcattc tggaggggag agctttgtgc ttgtcattcc   2132
Leu  *


agagtgctga ggccagggct gatggtctta aatgctcatt ttctggtttg gcatggtgag  2192
tgttggggtt gacatttaga actttaagtc tcacccatta tctggaatat tgtgattctg  2252
tttattcttc cagaatgctg aactcctt                                     2280

<210> 8
<211> 594
<212> PRT
<213> Homo sapiens

<400> 8
Met Arg Lys Pro Arg Leu Ser Arg Cys His Asp Ser Pro Ser Ser Gln
1               5                   10                  15
Asn Thr Trp Trp Ala Gln Asp Leu Asn Ser Val Asn Pro Cys Cys Tyr
            20                  25                  30
Tyr Pro Cys Gln His Gln Gly Ile Cys Val Arg Phe Gly Leu Asp Arg
            35                  40                  45
Tyr Gln Cys Asp Cys Thr Arg Thr Gly Tyr Ser Gly Pro Asn Cys Thr
            50                  55                  60
```

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Ile Pro Gly Leu Trp Thr Trp Leu Arg Asn Ser Leu Arg Pro Ser Pro
65            70                75                   80
Ser Phe Thr His Phe Leu Leu Thr His Gly Arg Trp Phe Trp Glu Phe
                85                90                95
Val Asn Ala Thr Phe Ile Arg Glu Met Leu Met Arg Leu Val Leu Thr
            100             105             110
Val Arg Ser Asn Leu Ile Pro Ser Pro Pro Thr Tyr Asn Ser Ala His
        115             120             125
Asp Tyr Ile Ser Trp Glu Ser Phe Ser Asn Val Ser Tyr Tyr Thr Arg
    130             135             140
Ile Leu Pro Ser Val Pro Lys Asp Cys Pro Thr Pro Met Gly Thr Lys
145             150             155                   160
Gly Lys Lys Gln Leu Pro Asp Ala Gln Leu Leu Ala Arg Arg Phe Leu
                165             170                 175
Leu Arg Arg Lys Phe Ile Pro Asp Pro Gln Gly Thr Asn Leu Met Phe
            180             185             190
Ala Phe Phe Ala Gln His Phe Thr His Gln Phe Phe Lys Thr Ser Gly
            195             200             205
Lys Met Gly Pro Gly Phe Thr Lys Ala Leu Gly His Gly Val Asp Leu
    210             215             220
Gly His Ile Tyr Gly Asp Asn Leu Glu Arg Gln Tyr Gln Leu Arg Leu
225             230             235                   240
Phe Lys Asp Gly Lys Leu Lys Tyr Gln Val Leu Asp Gly Glu Met Tyr
                245             250             255
Pro Pro Ser Val Glu Glu Ala Pro Val Leu Met His Tyr Pro Arg Gly
            260             265             270
Ile Pro Pro Gln Ser Gln Met Ala Val Gly Gln Glu Val Phe Gly Leu
        275             280             285
Leu Pro Gly Leu Met Leu Tyr Ala Thr Leu Trp Leu Arg Glu His Asn
    290             295             300
Arg Val Cys Asp Leu Leu Lys Ala Glu His Pro Thr Trp Gly Asp Glu
305             310             315                   320
Gln Leu Phe Gln Thr Thr Arg Leu Ile Leu Ile Gly Glu Thr Ile Lys
            325             330             335
Ile Val Ile Glu Glu Tyr Val Gln Gln Leu Ser Gly Tyr Phe Leu Gln
            340             345             350
Leu Lys Phe Asp Pro Glu Leu Leu Phe Gly Val Gln Phe Gln Tyr Arg
        355             360             365
Asn Arg Ile Ala Met Glu Phe Asn His Leu Tyr His Trp His Pro Leu
    370             375             380
Met Pro Asp Ser Phe Lys Val Gly Ser Gln Glu Tyr Ser Tyr Glu Gln
385             390             395                   400
Phe Leu Phe Asn Thr Ser Met Leu Val Asp Tyr Gly Val Glu Ala Leu
            405             410             415
Val Asp Ala Phe Ser Arg Gln Ile Ala Gly Arg Ile Gly Gly Gly Arg
            420             425             430
Asn Met Asp His His Ile Leu His Val Ala Val Asp Val Ile Arg Glu
        435             440             445
Ser Arg Glu Met Arg Leu Gln Pro Phe Asn Glu Tyr Arg Lys Arg Phe
    450             455             460
Gly Met Lys Pro Tyr Thr Ser Phe Gln Glu Leu Val Gly Glu Lys Glu
465             470             475                   480
Met Ala Ala Glu Leu Glu Glu Leu Tyr Gly Asp Ile Asp Ala Leu Glu
            485             490             495
Phe Tyr Pro Gly Leu Leu Leu Glu Lys Cys His Pro Asn Ser Ile Phe
```

```
                    500                      505                      510
Gly Glu Ser Met Ile Glu Ile Gly Ala Pro Phe Ser Leu Lys Gly Leu
        515                      520                      525
Leu Gly Asn Pro Ile Cys Ser Pro Glu Tyr Trp Lys Pro Ser Thr Phe
        530                      535                      540
Gly Gly Glu Val Gly Phe Asn Ile Val Lys Thr Ala Thr Leu Lys Lys
545                      550                      555                      560
Leu Val Cys Leu Asn Thr Lys Thr Cys Pro Tyr Val Ser Phe Arg Val
                565                      570                      575
Pro Asp Ala Ser Gln Asp Asp Gly Pro Ala Val Glu Arg Pro Ser Thr
            580                      585                      590
Glu Leu
```

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<210> 9
<211> 5093
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (136)...(1935)

<400> 9
aggtgacagc tggagggagg agcgggggtg gagccggggg aagggtgggg aggggatggg 60
ctggagctcc gggcagtgtg cgaggcgcac gcacaggagc ctgcactctg cgtcccgcac 120
cccagcagcc gcgcc atg agc cgg agt ctc ttg ctc tgg ttc ttg ctg ttc 171
                  Met Ser Arg Ser Leu Leu Leu Trp Phe Leu Leu Phe
                   1               5                      10

ctg ctc ctg ctc ccg ccg ctc ccc gtc ctg ctc gcg gac cca ggg gcg 219
Leu Leu Leu Leu Pro Pro Leu Pro Val Leu Leu Ala Asp Pro Gly Ala
            15                  20                  25

ccc acg cca gtg aat ccc tgt tgt tac tat cca tgc cag cac cag ggc 267
Pro Thr Pro Val Asn Pro Cys Cys Tyr Tyr Pro Cys Gln His Gln Gly
    30                  35                  40

atc tgt gtc cgc ttc ggc ctt gac cgc tac cag tgt gac tgc acc cgc 315
Ile Cys Val Arg Phe Gly Leu Asp Arg Tyr Gln Cys Asp Cys Thr Arg
45                  50                  55                  60

acg ggc tat tcc ggc ccc aac tgc acc atc cct ggc ctg tgg acc tgg 363
Thr Gly Tyr Ser Gly Pro Asn Cys Thr Ile Pro Gly Leu Trp Thr Trp
                65                  70                  75

ctc cgg aat tca ctg cgg ccc agc ccc tct ttc acc cac ttc ctg ctc 411
Leu Arg Asn Ser Leu Arg Pro Ser Pro Ser Phe Thr His Phe Leu Leu
            80                  85                  90

act cac ggg cgc tgg ttc tgg gag ttt gtc aat gcc acc ttc atc cga 459
Thr His Gly Arg Trp Phe Trp Glu Phe Val Asn Ala Thr Phe Ile Arg
            95                  100                 105
```

```
gag atg ctc atg cgc ctg gta ctc aca gtg cgc tcc aac ctt atc ccc   507
Glu Met Leu Met Arg Leu Val Leu Thr Val Arg Ser Asn Leu Ile Pro
    110             115             120

agt ccc ccc acc tac aac tca gca cat gac tac atc agc tgg gag tct   555
Ser Pro Pro Thr Tyr Asn Ser Ala His Asp Tyr Ile Ser Trp Glu Ser
125             130             135             140

ttc tcc aac gtg agc tat tac act cgt att ctg ccc tct gtg cct aaa   603
Phe Ser Asn Val Ser Tyr Tyr Thr Arg Ile Leu Pro Ser Val Pro Lys
                145             150             155

gat tgc ccc aca ccc atg gga acc aaa ggg aag aag cag ttg cca gat   651
Asp Cys Pro Thr Pro Met Gly Thr Lys Gly Lys Lys Gln Leu Pro Asp
                160             165             170

gcc cag ctc ctg gcc cgc cgc ttc ctg ctc agg agg aag ttc ata cct   699
Ala Gln Leu Leu Ala Arg Arg Phe Leu Leu Arg Arg Lys Phe Ile Pro
            175             180             185

gac ccc caa ggc acc aac ctc atg ttt gcc ttc ttt gca caa cac ttc   747
Asp Pro Gln Gly Thr Asn Leu Met Phe Ala Phe Phe Ala Gln His Phe
        190             195             200

acc cac cag ttc ttc aaa act tct ggc aag atg ggt cct ggc ttc acc   795
Thr His Gln Phe Phe Lys Thr Ser Gly Lys Met Gly Pro Gly Phe Thr
205             210             215             220

aag gcc ttg ggc cat ggg gta gac ctc ggc cac att tat gga gac aat   843
Lys Ala Leu Gly His Gly Val Asp Leu Gly His Ile Tyr Gly Asp Asn
                225             230             235

ctg gag cgt cag tat caa ctg cgg ctc ttt aag gat ggg aaa ctc aag   891
Leu Glu Arg Gln Tyr Gln Leu Arg Leu Phe Lys Asp Gly Lys Leu Lys
                240             245             250

tac cag gtg ctg gat gga gaa atg tac ccg ccc tcg gta gaa gag gcg   939
Tyr Gln Val Leu Asp Gly Glu Met Tyr Pro Pro Ser Val Glu Glu Ala
            255             260             265

cct gtg ttg atg cac tac ccc cga ggc atc ccg ccc cag agc cag atg   987
Pro Val Leu Met His Tyr Pro Arg Gly Ile Pro Pro Gln Ser Gln Met
    270             275             280

gct gtg ggc cag gag gtg ttt ggg ctg ctt cct ggg ctc atg ctg tat  1035
Ala Val Gly Gln Glu Val Phe Gly Leu Leu Pro Gly Leu Met Leu Tyr
285             290             295             300

gcc acg ctc tgg cta cgt gag cac aac cgt gtg tgt gac ctg ctg aag  1083
Ala Thr Leu Trp Leu Arg Glu His Asn Arg Val Cys Asp Leu Leu Lys
                305             310             315

gct gag cac ccc acc tgg ggc gat gag cag ctt ttc cag acg acc cgc  1131
Ala Glu His Pro Thr Trp Gly Asp Glu Gln Leu Phe Gln Thr Thr Arg
                320             325             330
```

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ctc atc ctc ata ggg gag acc atc aag att gtc atc gag gag tac gtg      1179
Leu Ile Leu Ile Gly Glu Thr Ile Lys Ile Val Ile Glu Glu Tyr Val
        335                 340                 345

cag cag ctg agt ggc tat ttc ctg cag ctg aaa ttt gac cca gag ctg      1227
Gln Gln Leu Ser Gly Tyr Phe Leu Gln Leu Lys Phe Asp Pro Glu Leu
        350                 355                 360

ctg ttc ggt gtc cag ttc caa tac cgc aac cgc att gcc atg gag ttc      1275
Leu Phe Gly Val Gln Phe Gln Tyr Arg Asn Arg Ile Ala Met Glu Phe
365                 370                 375                 380

aac cat ctc tac cac tgg cac ccc ctc atg cct gac tcc ttc aag gtg      1323
Asn His Leu Tyr His Trp His Pro Leu Met Pro Asp Ser Phe Lys Val
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ggc tcc cag gag tac agc tac gag cag ttc ttg ttc aac acc tcc atg      1371
Gly Ser Gln Glu Tyr Ser Tyr Glu Gln Phe Leu Phe Asn Thr Ser Met
            400                 405                 410

ttg gtg gac tat ggg gtt gag gcc ctg gtg gat gcc ttc tct cgc cag      1419
Leu Val Asp Tyr Gly Val Glu Ala Leu Val Asp Ala Phe Ser Arg Gln
            415                 420                 425

att gct ggc cgg atc ggt ggg ggc agg aac atg gac cac cac atc ctg      1467
Ile Ala Gly Arg Ile Gly Gly Gly Arg Asn Met Asp His His Ile Leu
        430                 435                 440

cat gtg gct gtg gat gtc atc agg gag tct cgg gag atg cgg ctg cag      1515
His Val Ala Val Asp Val Ile Arg Glu Ser Arg Glu Met Arg Leu Gln
445                 450                 455                 460

ccc ttc aat gag tac cgc aag agg ttt ggc atg aaa ccc tac acc tcc      1563
Pro Phe Asn Glu Tyr Arg Lys Arg Phe Gly Met Lys Pro Tyr Thr Ser
                465                 470                 475

ttc cag gag ctc gta gga gag aag gag atg gca gca gag ttg gag gaa      1611
Phe Gln Glu Leu Val Gly Glu Lys Glu Met Ala Ala Glu Leu Glu Glu
            480                 485                 490

ttg tat gga gac att gat gcg ttg gag ttc tac cct gga ctg ctt ctt      1659
Leu Tyr Gly Asp Ile Asp Ala Leu Glu Phe Tyr Pro Gly Leu Leu Leu
            495                 500                 505

gaa aag tgc cat cca aac tct atc ttt ggg gag agt atg ata gag att      1707
Glu Lys Cys His Pro Asn Ser Ile Phe Gly Glu Ser Met Ile Glu Ile
            510                 515                 520

ggg gct ccc ttt tcc ctc aag ggt ctc cta ggg aat ccc atc tgt tct      1755
Gly Ala Pro Phe Ser Leu Lys Gly Leu Leu Gly Asn Pro Ile Cys Ser
525                 530                 535                 540

ccg gag tac tgg aag ccg agc aca ttt ggc ggc gag gtg ggc ttt aac      1803
Pro Glu Tyr Trp Lys Pro Ser Thr Phe Gly Gly Glu Val Gly Phe Asn
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att gtc aag acg gcc aca ctg aag aag ctg gtc tgc ctc aac acc aag   1851
Ile Val Lys Thr Ala Thr Leu Lys Lys Leu Val Cys Leu Asn Thr Lys
            560   565   570

acc tgt ccc tac gtt tcc ttc cgt gtg ccg gat gcc agt cag gat gat   1899
Thr Cys Pro Tyr Val Ser Phe Arg Val Pro Asp Ala Ser Gln Asp Asp
        575   580   585

ggg cct gct gtg gag cga cca tcc aca gag ctc tga ggggcaggaa   1945
Gly Pro Ala Val Glu Arg Pro Ser Thr Glu Leu *
    590   595

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<213> Homo sapiens


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                20                  25                  30
Asn Pro Cys Cys Tyr Tyr Pro Cys Gln His Gln Gly Ile Cys Val Arg
             35                  40                  45
Phe Gly Leu Asp Arg Tyr Gln Cys Asp Cys Thr Arg Thr Gly Tyr Ser
         50                  55                  60
Gly Pro Asn Cys Thr Ile Pro Gly Leu Trp Thr Trp Leu Arg Asn Ser
65                  70                  75                  80
Leu Arg Pro Ser Pro Ser Phe Thr His Phe Leu Leu Thr His Gly Arg
                85                  90                  95
Trp Phe Trp Glu Phe Val Asn Ala Thr Phe Ile Arg Glu Met Leu Met
                100                 105                 110
Arg Leu Val Leu Thr Val Arg Ser Asn Leu Ile Pro Ser Pro Pro Thr
             115                 120                 125
Tyr Asn Ser Ala His Asp Tyr Ile Ser Trp Glu Ser Phe Ser Asn Val
         130                 135                 140
Ser Tyr Tyr Thr Arg Ile Leu Pro Ser Val Pro Lys Asp Cys Pro Thr
145                 150                 155                 160
Pro Met Gly Thr Lys Gly Lys Lys Gln Leu Pro Asp Ala Gln Leu Leu
                165                 170                 175
Ala Arg Arg Phe Leu Leu Arg Arg Lys Phe Ile Pro Asp Pro Gln Gly
             180                 185                 190
Thr Asn Leu Met Phe Ala Phe Phe Ala Gln His Phe Thr His Gln Phe
         195                 200                 205
Phe Lys Thr Ser Gly Lys Met Gly Pro Gly Phe Thr Lys Ala Leu Gly
         210                 215                 220
His Gly Val Asp Leu Gly His Ile Tyr Gly Asp Asn Leu Glu Arg Gln
225                 230                 235                 240
Tyr Gln Leu Arg Leu Phe Lys Asp Gly Lys Leu Lys Tyr Gln Val Leu
                245                 250                 255
Asp Gly Glu Met Tyr Pro Pro Ser Val Glu Glu Ala Pro Val Leu Met
             260                 265                 270
His Tyr Pro Arg Gly Ile Pro Pro Gln Ser Gln Met Ala Val Gly Gln
         275                 280                 285
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Glu Val Phe Gly Leu Leu Pro Gly Leu Met Leu Tyr Ala Thr Leu Trp
    290                 295                 300
Leu Arg Glu His Asn Arg Val Cys Asp Leu Leu Lys Ala Glu His Pro
305                 310                 315                 320
Thr Trp Gly Asp Glu Gln Leu Phe Gln Thr Thr Arg Leu Ile Leu Ile
                325                 330                 335
Gly Glu Thr Ile Lys Ile Val Ile Glu Glu Tyr Val Gln Gln Leu Ser
                340                 345                 350
Gly Tyr Phe Leu Gln Leu Lys Phe Asp Pro Glu Leu Leu Phe Gly Val
            355                 360                 365
Gln Phe Gln Tyr Arg Asn Arg Ile Ala Met Glu Phe Asn His Leu Tyr
    370                 375                 380
His Trp His Pro Leu Met Pro Asp Ser Phe Lys Val Gly Ser Gln Glu
385                 390                 395 ·               400
Tyr Ser Tyr Glu Gln Phe Leu Phe Asn Thr Ser Met Leu Val Asp Tyr
                405                 410                 415
Gly Val Glu Ala Leu Val Asp Ala Phe Ser Arg Gln Ile Ala Gly Arg
                420                 425                 430
Ile Gly Gly Gly Arg Asn Met Asp His His Ile Leu His Val Ala Val
            435                 440                 445
Asp Val Ile Arg Glu Ser Arg Glu Met Arg Leu Gln Pro Phe Asn Glu
    450                 455                 460
Tyr Arg Lys Arg Phe Gly Met Lys Pro Tyr Thr Ser Phe Gln Glu Leu
465                 470                 475                 480
Val Gly Glu Lys Glu Met Ala Ala Glu Leu Glu Glu Leu Tyr Gly Asp
                485                 490                 495 .
Ile Asp Ala Leu Glu Phe Tyr Pro Gly Leu Leu Leu Glu Lys Cys His
            500                 505                 510
Pro Asn Ser Ile Phe Gly Glu Ser Met Ile Glu Ile Gly Ala Pro Phe
            515                 520                 525
Ser Leu Lys Gly Leu Leu Gly Asn Pro Ile Cys Ser Pro Glu Tyr Trp
    530                 535                 540
Lys Pro Ser Thr Phe Gly Gly Glu Val Gly Phe Asn Ile Val Lys Thr
545                 550                 555                 560
Ala Thr Leu Lys Lys Leu Val Cys Leu Asn Thr Lys Thr Cys Pro Tyr
                565     .           570                 575
Val Ser Phe Arg Val Pro Asp Ala Ser Gln Asp Asp Gly Pro Ala Val
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Glu Arg Pro Ser Thr Glu Leu
            595


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 1   5   10   15

aat aca tgg tgg gcc cag gat ctg aac tca gtc   81
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<210> 16
<211> 27

- 24 -

<212> PRT
<213> Homo sapiens

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 1   5   10   15
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            20   25

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Met Arg Lys Pro Arg Leu Arg
 1   5

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 1   5

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 1   5

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 1               5


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Asp Leu Asn Ser Val Asn Pro Cys Cys
 1               5


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Lys Pro Arg Leu Arg Lys Lys Gln Leu
 1               5


<210> 24
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Lys Pro Arg Leu Arg Lys Lys Gln Leu
 1               5
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tgcccgccgc tcgg atg ctc gcc cgc gcc ctg ctg ctg tgc gcg gtc ctg   170
               Met Leu Ala Arg Ala Leu Leu Leu Cys Ala Val Leu
               1   5   10

gcg ctc agc cat aca gca aat cct tgc tgt tcc cac cca tgt caa aac   218
Ala Leu Ser His Thr Ala Asn Pro Cys Cys Ser His Pro Cys Gln Asn
        15   20   25

cga ggt gta tgt atg agt gtg gga ttt gac cag tat aag tgc gat tgt   266
Arg Gly Val Cys Met Ser Val Gly Phe Asp Gln Tyr Lys Cys Asp Cys
    30   35   40

acc cgg aca gga ttc tat gga gaa aac tgc tca aca ccg gaa ttt ttg   314
Thr Arg Thr Gly Phe Tyr Gly Glu Asn Cys Ser Thr Pro Glu Phe Leu
45   50   55   60

aca aga ata aaa tta ttt ctg aaa ccc act cca aac aca gtg cac tac   362
Thr Arg Ile Lys Leu Phe Leu Lys Pro Thr Pro Asn Thr Val His Tyr
                65   70   75

ata ctt acc cac ttc aag gga ttt tgg aac gtt gtg aat aac att ccc   410
Ile Leu Thr His Phe Lys Gly Phe Trp Asn Val Val Asn Asn Ile Pro
                80   85   90

ttc ctt cga aat gca att atg agt tat gtc ttg aca tcc aga tca cat   458
Phe Leu Arg Asn Ala Ile Met Ser Tyr Val Leu Thr Ser Arg Ser His
        95   100   105

ttg att gac agt cca cca act tac aat gct gac tat ggc tac aaa agc   506
Leu Ile Asp Ser Pro Pro Thr Tyr Asn Ala Asp Tyr Gly Tyr Lys Ser
    110   115   120

tgg gaa gcc ttc tct aac ctc tcc tat tat act aga gcc ctt cct cct   554
Trp Glu Ala Phe Ser Asn Leu Ser Tyr Tyr Thr Arg Ala Leu Pro Pro
125   130   135   140

gtg cct gat gat tgc ccg act ccc ttg ggt gtc aaa ggt aaa aag cag   602
Val Pro Asp Asp Cys Pro Thr Pro Leu Gly Val Lys Gly Lys Lys Gln
                145   150   155

ctt cct gat tca aat gag att gtg gaa aaa ttg ctt cta aga aga aag   650
Leu Pro Asp Ser Asn Glu Ile Val Glu Lys Leu Leu Leu Arg Arg Lys
                160   165   170

- 27 -

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ttc atc cct gat ccc cag ggc tca aac atg atg ttt gca ttc ttt gcc    698
Phe Ile Pro Asp Pro Gln Gly Ser Asn Met Met Phe Ala Phe Phe Ala
        175                 180                 185

cag cac ttc acg cat cag ttt ttc aag aca gat cat aag cga ggg cca    746
Gln His Phe Thr His Gln Phe Phe Lys Thr Asp His Lys Arg Gly Pro
        190                 195                 200

gct ttc acc aac ggg ctg ggc cat ggg gtg gac tta aat cat att tac    794
Ala Phe Thr Asn Gly Leu Gly His Gly Val Asp Leu Asn His Ile Tyr
205                 210                 215                 220

ggt gaa act ctg gct aga cag cgt aaa ctg cgc ctt ttc aag gat gga    842
Gly Glu Thr Leu Ala Arg Gln Arg Lys Leu Arg Leu Phe Lys Asp Gly
                225                 230                 235

aaa atg aaa tat cag ata att gat gga gag atg tat cct ccc aca gtc    890
Lys Met Lys Tyr Gln Ile Ile Asp Gly Glu Met Tyr Pro Pro Thr Val
        240                 245                 250

aaa gat act cag gca gag atg atc tac cct cct caa gtc cct gag cat    938
Lys Asp Thr Gln Ala Glu Met Ile Tyr Pro Pro Gln Val Pro Glu His
        255                 260                 265

cta cgg ttt gct gtg ggg cag gag gtc ttt ggt ctg gtg cct ggt ctg    986
Leu Arg Phe Ala Val Gly Gln Glu Val Phe Gly Leu Val Pro Gly Leu
        270                 275                 280

atg atg tat gcc aca atc tgg ctg cgg gaa cac aac aga gta tgc gat   1034
Met Met Tyr Ala Thr Ile Trp Leu Arg Glu His Asn Arg Val Cys Asp
285                 290                 295                 300

gtg ctt aaa cag gag cat cct gaa tgg ggt gat gag cag ttg ttc cag   1082
Val Leu Lys Gln Glu His Pro Glu Trp Gly Asp Glu Gln Leu Phe Gln
                305                 310                 315

aca agc agg cta ata ctg ata gga gag act att aag att gtg att gaa   1130
Thr Ser Arg Leu Ile Leu Ile Gly Glu Thr Ile Lys Ile Val Ile Glu
                320                 325                 330

gat tat gtg caa cac ttg agt ggc tat cac ttc aaa ctg aaa ttt gac   1178
Asp Tyr Val Gln His Leu Ser Gly Tyr His Phe Lys Leu Lys Phe Asp
        335                 340                 345

cca gaa cta ctt ttc aac aaa caa ttc cag tac caa aat cgt att gct   1226
Pro Glu Leu Leu Phe Asn Lys Gln Phe Gln Tyr Gln Asn Arg Ile Ala
        350                 355                 360

gct gaa ttt aac acc ctc tat cac tgg cat ccc ctt ctg cct gac acc   1274
Ala Glu Phe Asn Thr Leu Tyr His Trp His Pro Leu Leu Pro Asp Thr
365                 370                 375                 380

ttt caa att cat gac cag aaa tac aac tat caa cag ttt atc tac aac   1322
Phe Gln Ile His Asp Gln Lys Tyr Asn Tyr Gln Gln Phe Ile Tyr Asn
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aac tct ata ttg ctg gaa cat gga att acc cag ttt gtt gaa tca ttc   1370
Asn Ser Ile Leu Leu Glu His Gly Ile Thr Gln Phe Val Glu Ser Phe
            400   405   410

acc agg caa att gct ggc agg gtt gct ggt ggt agg aat gtt cca ccc   1418
Thr Arg Gln Ile Ala Gly Arg Val Ala Gly Gly Arg Asn Val Pro Pro
            415   420   425

gca gta cag aaa gta tca cag gct tcc att gac cag agc agg cag atg   1466
Ala Val Gln Lys Val Ser Gln Ala Ser Ile Asp Gln Ser Arg Gln Met
            430   435   440

aaa tac cag tct ttt aat gag tac cgc aaa cgc ttt atg ctg aag ccc   1514
Lys Tyr Gln Ser Phe Asn Glu Tyr Arg Lys Arg Phe Met Leu Lys Pro
445   450   455   460

tat gaa tca ttt gaa gaa ctt aca gga gaa aag gaa atg tct gca gag   1562
Tyr Glu Ser Phe Glu Glu Leu Thr Gly Glu Lys Glu Met Ser Ala Glu
                465   470   475

ttg gaa gca ctc tat ggt gac atc gat gct gtg gag ctg tat cct gcc   1610
Leu Glu Ala Leu Tyr Gly Asp Ile Asp Ala Val Glu Leu Tyr Pro Ala
            480   485   490

ctt ctg gta gaa aag cct cgg cca gat gcc atc ttt ggt gaa acc atg   1658
Leu Leu Val Glu Lys Pro Arg Pro Asp Ala Ile Phe Gly Glu Thr Met
            495   500   505

gta gaa gtt gga gca cca ttc tcc ttg aaa gga ctt atg ggt aat gtt   1706
Val Glu Val Gly Ala Pro Phe Ser Leu Lys Gly Leu Met Gly Asn Val
            510   515   520

ata tgt tct cct gcc tac tgg aag cca agc act ttt ggt gga gaa gtg   1754
Ile Cys Ser Pro Ala Tyr Trp Lys Pro Ser Thr Phe Gly Gly Glu Val
525   530   535   540

ggt ttt caa atc atc aac act gcc tca att cag tct ctc atc tgc aat   1802
Gly Phe Gln Ile Ile Asn Thr Ala Ser Ile Gln Ser Leu Ile Cys Asn
            545   550   555

aac gtg aag ggc tgt ccc ttt act tca ttc agt gtt cca gat cca gag   1850
Asn Val Lys Gly Cys Pro Phe Thr Ser Phe Ser Val Pro Asp Pro Glu
            560   565   570

ctc att aaa aca gtc acc atc aat gca agt tct tcc cgc tcc gga cta   1898
Leu Ile Lys Thr Val Thr Ile Asn Ala Ser Ser Ser Arg Ser Gly Leu
            575   580   585

gat gat atc aat ccc aca gta cta cta aaa gaa cgt tcg act gaa ctg   1946
Asp Asp Ile Asn Pro Thr Val Leu Leu Lys Glu Arg Ser Thr Glu Leu
            590   595   600

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Met Ser Val Gly Phe Asp Gln Tyr Lys Cys Asp Cys Thr Arg Thr Gly
        35   40   45
Phe Tyr Gly Glu Asn Cys Ser Thr Pro Glu Phe Leu Thr Arg Ile Lys

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          50                      55                      60
Leu Phe Leu Lys Pro Thr Pro Asn Thr Val His Tyr Ile Leu Thr His
65                      70                      75                      80
Phe Lys Gly Phe Trp Asn Val Val Asn Asn Ile Pro Phe Leu Arg Asn
                    85                      90                      95
Ala Ile Met Ser Tyr Val Leu Thr Ser Arg Ser His Leu Ile Asp Ser
                    100                     105                     110
Pro Pro Thr Tyr Asn Ala Asp Tyr Gly Tyr Lys Ser Trp Glu Ala Phe
                    115                     120                     125
Ser Asn Leu Ser Tyr Tyr Thr Arg Ala Leu Pro Pro Val Pro Asp Asp
          130                     135                     140
Cys Pro Thr Pro Leu Gly Val Lys Gly Lys Lys Gln Leu Pro Asp Ser
145                     150                     155                     160
Asn Glu Ile Val Glu Lys Leu Leu Leu Arg Arg Lys Phe Ile Pro Asp
                    165                     170                     175
Pro Gln Gly Ser Asn Met Met Phe Ala Phe Phe Ala Gln His Phe Thr
                    180                     185                     190
His Gln Phe Phe Lys Thr Asp His Lys Arg Gly Pro Ala Phe Thr Asn
          195                     200                     205
Gly Leu Gly His Gly Val Asp Leu Asn His Ile Tyr Gly Glu Thr Leu
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Ala Arg Gln Arg Lys Leu Arg Leu Phe Lys Asp Gly Lys Met Lys Tyr
225                     230                     235                     240
Gln Ile Ile Asp Gly Glu Met Tyr Pro Pro Thr Val Lys Asp Thr Gln
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Ala Glu Met Ile Tyr Pro Pro Gln Val Pro Glu His Leu Arg Phe Ala
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Val Gly Gln Glu Val Phe Gly Leu Val Pro Gly Leu Met Met Tyr Ala
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Thr Ile Trp Leu Arg Glu His Asn Arg Val Cys Asp Val Leu Lys Gln
          290                     295                     300
Glu His Pro Glu Trp Gly Asp Glu Gln Leu Phe Gln Thr Ser Arg Leu
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Ile Leu Ile Gly Glu Thr Ile Lys Ile Val Ile Glu Asp Tyr Val Gln
                    325                     330                     335
His Leu Ser Gly Tyr His Phe Lys Leu Lys Phe Asp Pro Glu Leu Leu
                    340                     345                     350
Phe Asn Lys Gln Phe Gln Tyr Gln Asn Arg Ile Ala Ala Glu Phe Asn
                    355                     360                     365
Thr Leu Tyr His Trp His Pro Leu Leu Pro Asp Thr Phe Gln Ile His
          370                     375                     380
Asp Gln Lys Tyr Asn Tyr Gln Gln Phe Ile Tyr Asn Asn Ser Ile Leu
385                     390                     395                     400
Leu Glu His Gly Ile Thr Gln Phe Val Glu Ser Phe Thr Arg Gln Ile
                    405                     410                     415
Ala Gly Arg Val Ala Gly Gly Arg Asn Val Pro Pro Ala Val Gln Lys
                    420                     425                     430
Val Ser Gln Ala Ser Ile Asp Gln Ser Arg Gln Met Lys Tyr Gln Ser
                    435                     440                     445
Phe Asn Glu Tyr Arg Lys Arg Phe Met Leu Lys Pro Tyr Glu Ser Phe
          450                     455                     460
Glu Glu Leu Thr Gly Glu Lys Glu Met Ser Ala Glu Leu Glu Ala Leu
465                     470                     475                     480
Tyr Gly Asp Ile Asp Ala Val Glu Leu Tyr Pro Ala Leu Leu Val Glu
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Ala Tyr Trp Lys Pro Ser Thr Phe Gly Gly Glu Val Gly Phe Gln Ile
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Ile Asn Thr Ala Ser Ile Gln Ser Leu Ile Cys Asn Asn Val Lys Gly
545             550               555               560
Cys Pro Phe Thr Ser Phe Ser Val Pro Asp Pro Glu Leu Ile Lys Thr
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